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What's eating your soybean leaves?

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Abstract
In addition to soybean aphids feeding on soybeans in late July and early August, other insects may be feeding on the leaves as well. The three most common groups of leaf defoliators will be bean leaf beetles, Japanese beetles, and grasshoppers. Sometimes these insects cannot be found on the leaf or plant, so recognizing the injury they cause can be helpful in identifying the cause of the feeding. Each group has a fairly unique feeding pattern that makes it relatively easy to distinguish one from another. These feeding types are described below.

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What's eating your soybean leaves?

by Marlin E. Rice, Department of Entomology

In addition to soybean aphids feeding on soybeans in late July and early August, other insects may be feeding on the leaves as well. The three most common groups of leaf defoliators will be bean leaf beetles, Japanese beetles, and grasshoppers. Sometimes these insects cannot be found on the leaf or plant, so recognizing the injury they cause can be helpful in identifying the cause of the feeding. Each group has a fairly unique feeding pattern that makes it relatively easy to distinguish one from another. These feeding types are described below.

Bean leaf beetle leaf injury

Adults typically eat round or "oval" holes about the diameter of a pencil, although these holes may occasionally be slightly larger. Often there is still green tissue separating the holes.

Bean leaf beetle injury showing round and oval holes. (Marlin E. Rice)

Japanese beetle injury

Adults typically eat very small holes in the leaf, which results in a "net-like" appearance. The holes are nearly oval and often connected by a fine network of leaf veins. However, the Japanese beetle does not occur in all Iowa counties but has been "officially" recorded in only 23 counties and mostly near metropolitan areas (see map). Therefore, injury from this insect would not be expected in many soybean growing areas.

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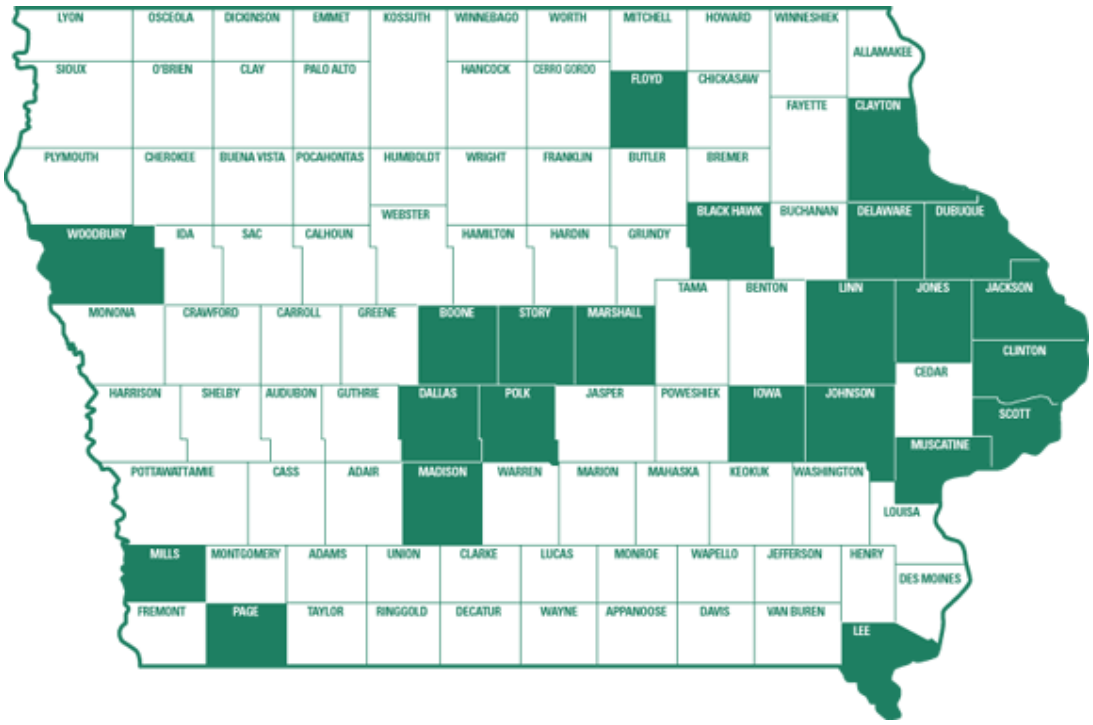
Japanese beetle injury showing "net-like" holes in the upper leaf, but the round holes in the bottom left of the left leaf were caused by bean leaf beetles. (Marlin E. Rice)



Shaded counties in Iowa reported Japanese beetles.

Japanese beetles feeding on a soybean leaflet. (Marlin E. Rice)

Grasshopper injury

Small grasshopper nymphs will eat very small holes in the leaf, similar to the injury caused by Japanese beetles, but the holes are often jagged and not very oval in shape. Older nymphs and adult grasshoppers will consume much of a leaf so that only the major leaf veins and small amounts of connecting tissue remain.

Defoliation thresholds exist for soybeans, and it should be remembered that soybeans can tolerate a fair amount of defoliation. Typically, 20-25 percent defoliation of all the leaves (not just the leaves in the top of the plant) would be necessary to justify an insecticide application in late season, pod-setting soybeans.

Grasshopper nymphs will eat "net-like" holes in soybean leaves, similar to the injury caused by Japanese beetles. (Marlin E. Rice)

Adult grasshoppers and older nymphs will remove most of the leaf tissue except for the leaf veins. (Marlin E. Rice)

Marlin E. Rice is a professor of entomology with extension and research responsibilities in field and forage crops.

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